WHAT IS CLAIMED IS:

1. A probe medium, comprising:

a probe capable of specifically binding to a target substance;

a medium containing an organic solvent; and

a substance for solubilizing the probe in the organic solvent.

2. A probe medium according to claim 1, wherein the probe is a nucleic acid probe.

3. A probe medium according to claim 1, wherein the organic solvent is a solvent in which the probe is insoluble.

4. A probe medium according to claim 1, wherein the substance for solubilizing the probe in the organic solvent is an amphipathic substance.

5. A probe medium according to claim 1, wherein the substance for solubilizing the probe in the organic solvent is a substance selected from the group consisting of n-hexadecyl trimethyl ammonium bromide, n-hexadecyl trimethyl ammonium chloride, and cetylpyridinium chloride, or a mixture containing at least a substance selected from the group.

6. A probe medium according to claim 1, further comprising a substance for immobilizing the probe on a substrate.

7. A probe medium according to claim 6, wherein the substance for immobilizing the probe on the substrate is a silane coupling agent.

8. A probe medium according to claim 1, further comprising a solvent in which the probe is soluble.

9. A probe medium according to claim 1, wherein an amount of the substance for solubilizing the probe in the organic solvent is adjusted within a range in which white turbidity of the probe medium can be observed.

10. A method of producing a probe medium that contains a probe capable of specifically binding to a target substance, comprising the steps of:

dissolving the probe in a solvent in which the probe is soluble;

separating the probe from the solvent by acting on the solvent a substance for solubilizing the probe in an organic solvent; and

dissolving the probe in the organic solvent by adding the organic solvent to the probe.

11. A method of producing the probe medium according to claim 10, wherein an amount of the substance for solubilizing the probe in the organic solvent is acted on a basis of a product between a length of the probe and a mole number of the probe.

12. A method of producing the probe medium according to claim 10, wherein an amount of the substance for solubilizing the probe in the organic solvent is acted on a basis of an amount of the probe separated from the solvent.

13. A method of immobilizing a probe on a substrate, comprising providing the probe medium of claim 1 on a substrate by spotting.

14. A detection element produced by the probe-immobilizing method of claim 13.